

THE USE OF CLINICAL CERVICAL SPINE CLEARANCE IN TRAUMA PATIENTS: A LITERATURE REVIEW

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Contribution to Emergency Nursing Practice:

- This manuscript adds to emergency nursing knowledge by discussing the risks of cervical collars and the latest evidence regarding clinical clearance of cervical spine immobilization precautions in trauma patients.
- With this evidence, the use of cervical collars can be decreased, and only those patients who cannot be clinically cleared will need to be immobilized. This will reduce needless routine spinal immobilization of all trauma patients.

Abstract

Introduction: Five million patients in America are placed in spinal immobilization annually, with only 1% to 2% of these patients suffering from an unstable cervical spine injury. Prehospital agencies are employing selective and limited immobilization practices, but there is concern that this practice misses cervical spine injuries and therefore possibly predisposes patients to worsening injuries.

Methods: A systematic review was conducted that examined literature from the last 5 years that reviewed cervical spine immobilization application and/or clearance in alert trauma patients.

Results: Prehospital selective immobilization protocols and bedside clinical clearance examinations are becoming more commonplace, with few missed injuries or poor outcomes. Prehospital providers can evaluate patients in the field safely to assess who needs or does not need cervical collars; similar criteria can be used in the emergency department. Harm from cervical collars is increasingly documented, with concerns that risks exceed possible benefits.

Discussion: The literature suggests that alert trauma patients can be cleared from cervical spine immobilization safely through a structured algorithm in either the prehospital or ED setting. The evidence is primarily observational. Thus, many providers who fear missing cervical injuries may be reluctant to follow the recommendations despite few or no published cases of sudden deterioration from missed cervical spine injuries.

Key words: Cervical collars; Spinal immobilization; Trauma

Prehospital and emergency personnel care for victims of traumatic injuries daily. In 2013, it was estimated that 21.4% of all ED visits were related to injuries.¹ Victims of significant injuries are considered trauma patients; a longstanding practice in the care of the trauma

patient is to immobilize the spine routinely because of the possibility of a spinal column injury from the mechanism of the trauma.² Spine immobilization may be done in the prehospital setting or the emergency department when a patient presents as a “walk-in” after trauma. This practice, which typically involves a hard cervical collar and backboard, has resulted in approximately 5 million patients being placed in spinal immobilization annually in the United States.²

Despite this routine practice being performed on millions of trauma victims, the rate of stable and unstable cervical spine (C-spine) fractures in those who experienced severe trauma is very rare: 2% to 5% and 1% to 2%, respectively.² Among victims with less intense mechanisms, such as low-speed motor vehicle crash or ground level falls, the rates of cervical fractures and spinal cord injuries are even less at 1.2% to 3.3% and 1% to 2%, respectively.²

Cervical collars (C-collars) are intended to protect potential spinal injuries and prevent progression of the damage. However, there is concern that they may increase

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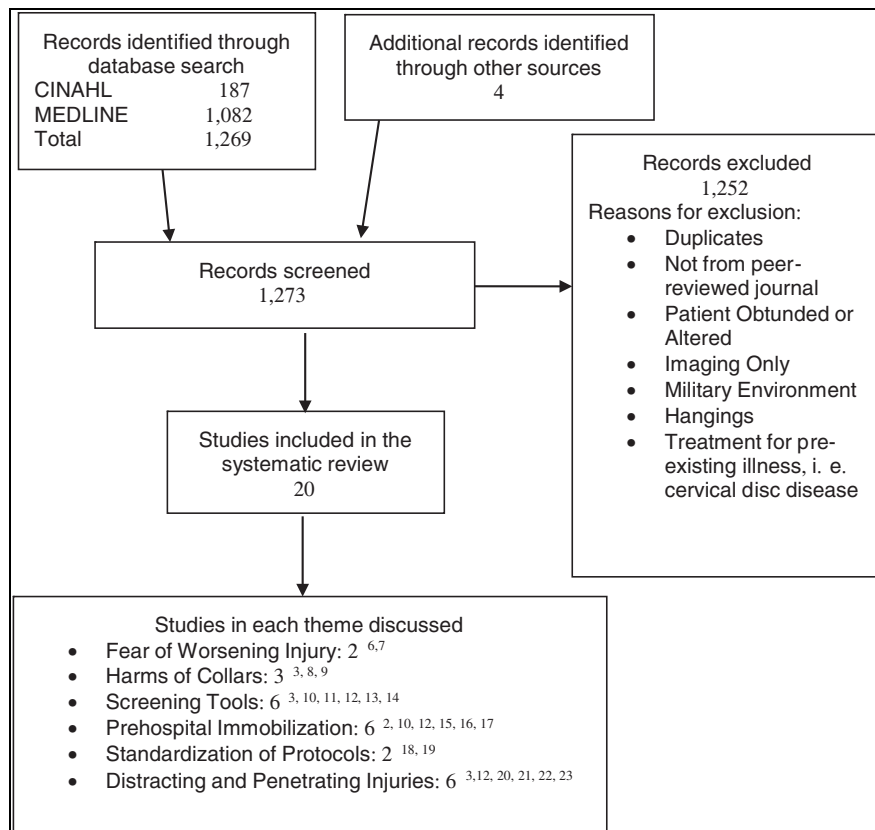
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FIGURE

Flow diagram boxes from top to bottom illustrate original yield of sources, screening, exclusion, and finally sources included in review.

the severity of an injury rather than protect it.³ Sundstrom et al³ noted that a cervical collar may cause jugular venous compression and thus increase intracranial pressure and complicate airway management. In the pediatric trauma population, C-spine immobilization is associated with more pain, an increased likelihood of exposure to radiation, and admission to hospitals.⁴

Cervical spine immobilization is a common practice that can be overused and may also expose trauma patients to unnecessary harm. Some prehospital agencies are changing their approaches and limiting the use of C-spine immobilization to a selected few patients. However, the fear of worsening an undetected cervical spine injury (CSI) is great. Many clinicians are accustomed to routine spinal immobilization of all trauma patients and may not be comfortable with these changes. This systematic review will examine the latest evidence to determine if a bedside clinical C-spine clearance examination, compared with the routine C-collar application and diagnostic imaging, can be used safely by nurses and emergency first responders in alert, neurologically intact trauma patients in the emergency department and in the field.

Purpose

Cervical spine damage can result in significant permanent disabilities such as paraplegia, tetraplegia, or death. Cervical spine injuries are a leading cause of long-term disability, yet only 1% to 5% of the 10 million trauma patients seen in emergency departments annually sustain CSIs.² Cervical spine injuries can create fear among health care providers owing to potential life-threatening and life-changing consequences if a CSI is missed during the evaluation of a trauma patient.³ It is the purpose of this systematic review to present nurses with the risks of cervical collars and the latest evidence regarding clinical clearance of C-spine immobilization precautions in trauma patients.

Methods

In April of 2017, the Cumulative Index to Nursing and Allied Health Literature and MEDLINE databases were

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